

WHAT IS CLAIMED IS:

1. A composition for osteoinduction which comprises a composite material comprising an acidic-phospholipid complex and collagen, wherein the complex comprises calcium, phospholipid, and inorganic phosphate.
2. The composition of claim 1, wherein the complex comprises calcium, phospholipid, and inorganic phosphate in a molar ratio range of 45-55 parts calcium:35-45 parts phospholipid:5-15 parts inorganic phosphate, respectively.
3. The composition of claim 1, wherein the complex comprises calcium, phospholipid, and inorganic phosphate in a molar ratio range of 47-53 parts calcium:38-42 parts phospholipid:8-12 parts inorganic phosphate, respectively.
4. The composition of claim 1, wherein the complex comprises calcium, phospholipid, and inorganic phosphate in a molar ratio of 50 parts calcium:40 parts phospholipid:10 parts inorganic phosphate, respectively.
5. The composition of claim 1, wherein the calcium is calcium chloride or soluble calcium salts of any other weak or strong acid.
6. The composition of claim 5, wherein the calcium salt is calcium nitrate.
7. The composition of claim 5, wherein the calcium salt is calcium acetate.
8. The composition of claim 1, wherein the phospholipid is phosphatidylserine.

9. The composition of claim 8, wherein the phosphatidylserine has fatty acid chains, which have at least 12 carbons per chain that are identical or different, saturated or unsaturated.
10. The composition of claim 1, wherein the inorganic phosphate is ammonium acid phosphate.
11. The composition of claim 1, wherein the inorganic phosphate is an acid phosphate salt.
12. The composition of claim 11, wherein the acid phosphate salt is sodium phosphate.
13. The composition of claim 11, wherein the acid phosphate salt is potassium phosphate.
14. The composition of claim 1, wherein the collagen is type I collagen.
15. The composition of claim 1, wherein the collagen is type II collagen.
16. The composition of claim 1, wherein the collagen is type IX collagen.
17. The composition of claim 1, wherein the collagen is a mixture of type II and type IX collagen.
18. A method of preparing an acidic phospholipid complex, wherein the method comprises:
 - a) adding two aqueous buffers to phosphatidylserine to form an aqueous solution;
 - b) vortexing the solution under vacuum;
 - c) freezing the solution rapidly under vacuum;

- d) thawing the solution;
 - e) extracting the formed complex from the solution in chloroform:methanol; and
 - f) drying the complex under nitrogen and storing under vacuum.
19. The method of claim 18, wherein the two aqueous buffers are 1.5mM ammonium acid phosphate and 3mM calcium chloride.
20. The method of claim 18, wherein the method further comprises resuspending the complex in buffer.
21. The method of claim 20, wherein the buffer is phosphate buffered saline or chloroform:methanol (2:1) v/v.
22. A method of preparing a composition for osteoinduction comprising:
- a) dissolving collagen in acetic acid to form a solution;
 - b) adding the solution to complexed acidic phospholipid dried under nitrogen to form a mixture;
 - c) vortexing the mixture under vacuum;
 - d) freezing the mixture under vacuum to form a solid;
 - e) thawing the solid; and
 - f) increasing pH to 7.4 with an appropriate buffer.
23. A method of preparing a composition for osteoinduction comprising:
- a) suspending dried complexed acidic phospholipid in PBS buffer to form a solution;
 - b) introducing collagen into the solution, resulting in a gel formed composite;
 - c) freezing the solution under vacuum to form a solid;
 - d) thawing the solid; and
 - e) increasing pH to 7.4 with an appropriate buffer, resulting in a gel formed composite.

24. A method for inducing the growth of bone in a mammal comprising applying an effective growth stimulating amount of a complexed-acidic-phospholipid-collagen composite at a site in need of desired tissue growth.
25. The method of claim 24, wherein the desired tissue growth is bone growth.
26. The method of claim 24, wherein the desired tissue growth is calcifying cartilage growth.
27. The method of claim 24, wherein the desired tissue growth is dentin growth.
28. The method of claim 24, wherein the desired tissue growth is cementum growth.
29. The method of claim 24, wherein the composite is in paste form, sponge form, molded form, or preadsorbed onto an implant material.
30. The method of claim 24, wherein the composite is encapsulated by an organic polymer.
31. The method of claim 30, wherein the organic polymer is selected from polyglycolic acid, nylon, and polypropylene.
32. The method of claim 30, further comprising one or more materials selected from the group consisting of autologous osteoblasts, odontoblasts, antibiotics, growth factors, cytokines, and nanomaterials.
33. The method of claim 24, wherein said effective growth stimulating amount ranges between about 5 mg and about 5g.

34. The method of claim 24, wherein said effective growth stimulating amount ranges between about 5 g and about 100g.